ABSTRACT

A method for accurately estimating a pose of the human head in natural scenes utilizing positions of the prominent facial features relative to the position of the head. A high-dimensional, randomly sparse representation of a human face, using a simplified facial feature model transforms a raw face image into sets of vectors representing the fits of the face to a random, sparse set of model configurations. The transformation collects salient features of the face image which are useful to estimate the pose, while suppressing irrelevant variations of face appearance. The relation between the sparse representation of the pose is learned using Support Vector Regression (SVR). The sparse representation, combined with the SVR learning is then used to estimate a pose of facial images.